Habitat Expansion Agreement

for

Central Valley Spring-Run Chinook Salmon and California Central Valley Steelhead

Questionnaire Instructions

The attached questionnaire is intended to solicit information needed by the Steering Committee to review projects relative to the criteria established in the Habitat Expansion Agreement. For each proposed action (project), please complete the questionnaire to the fullest extent possible. Please provide citations where applicable and provide a full reference for each citation at the end of this questionnaire (Section X. Supporting Documents). Specific instructions follow.

I. Contact Information

Provide the name of the agency or group making the proposal as well as a contact person for the project. Include contact information such as mailing address, phone number, and email address.

II. Project Description

Provide a descriptive name for the action (project). If the action is listed in the *Working List of Potential Habitat Expansion Actions* (provided during the January 2009 meetings of HEA parties), please include the reference number associated with the action. The project location should specify the watershed or subwatershed (e.g., Deer Creek, Beegum Creek) as well as specific areas within the watershed where the project will be located and what portions of the watershed will benefit from the project. Please include geographic coordinates of the project location(s), if applicable. The project description should be a narrative that provides as much detail as possible about the project.

III. Species Limiting Factors

In this section, indicate the factors that currently limit production of spring-run Chinook salmon and/or steelhead in your watershed. The intent is that the environmental and biological objectives of your project address these limiting factors in some way. Please check one or more of the limiting factors that apply to your watershed. In the second column, describe how and where the factor limits spring-run Chinook salmon and/or steelhead. For each factor that you check, please rank its effect on spring-run Chinook salmon and/or steelhead using the drop-down box in the last column. Finally, we also ask that you describe the source of your conclusions, such as a watershed assessment or other document. Please provide enough information that we can find the document if we need it.

IV. Project Objectives—Environmental

Environmental objectives describe how the project is intended to address the limiting factors to achieve the biological objective described in the next section. Environmental objectives should be as specific and quantitative as possible (e.g., reduce gravel embeddedness in the watershed from 75% to 25% by fencing riparian areas to exclude cattle and allow riparian forest to reestablish). Describe how you think environmental objectives relate specifically to the biological objectives. In the last column, we ask you to describe the environmental objectives as either the primary or secondary focus of the project. For example, a project to plant trees might have a primary focus on riparian/floodplain function with a secondary focus on temperature or water quality.

V. Project Objectives—Biological

Biological objectives describe the anticipated biological response from the project and should be as quantitative as possible. Indicate which species and life stages are the focus of the project. Describe specifically the general condition of the target species in your watershed relative to the historical abundance. The condition of the species should be indicated using the categories in the drop-down box. Species condition categories are defined on the last page of this form. Biological objectives should include the following information: (1) an estimate of the expected contribution of the project in terms of potential adult returns, to the extent possible (and an explanation of how the estimate was developed); and (2) an explanation of how the biological objective for the species is addressed by the action relative to the environmental limiting factors (e.g., the biological objective of an action might be to increase egg incubation survival in a watershed that is currently limited by sediment levels).

VI. Project Cost

To the extent possible, estimate the capital cost of the project, the annual operating and maintenance (O&M) cost, a description of annual O&M activities, and the project lifetime (i.e., how many years O&M activities are expected, including indefinitely, and how long until you expect the project to provide benefits). Provide any confirmed or potential funding partners, or opportunities for cost sharing with other funders or between projects. Also, identify any confirmed or potential partners that might provide maintenance support for the project (funding support or labor support).

VII. Schedule

Describe the project schedule, including a potential start date, construction period, and environmental and biological response times (i.e., the expected time to realize environmental and biological benefits). The last points refer to the maturation period for the project during which time environmental conditions develop. For example, it may take 50–100 years before full environmental benefits (e.g., shading, channel stability, water quality) of planting riparian trees are realized.

VIII. Feasibility

Describe the feasibility and challenges of the project. Feasibility issues should include primarily technical issues, success of projects utilizing similar technology, and particular challenges posed by the specific project. Other issues of feasibility that may be included are challenges associated with property ownership, permitting, zoning, and other social-economic-legal issues.

IX. Project Support

Describe the support or potential conflicts associated with the project. Specifically, provide supporting and cooperating entities (e.g., agencies, non-governmental organizations). Are there cooperating agencies or groups, aside from the potential funding partners mentioned previously? Describe the degree of local support and any known opposition or conflicts with other parties.

X. Supporting Documents

Provide full references for each citation used to support the information presented in this questionnaire for your project. At a minimum, a reference should include the author(s) name; name of agency/organization (if applicable); title of the document; volume and title of journal, if the document is taken from a professional journal; and publisher, date, and location of publication.

Questionnaire

for

Information on Potential Projects to Support Spring-Run Chinook Salmon and Steelhead in the Sacramento River Basin for the Habitat Expansion Agreement

DUE: Friday, February 27, 2009

Send completed questionnaires to hea@water.ca.gov

I. Contact Information

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II. Project Description

Project Name:	Antelope Creek juvenile fish passage
Reference No. or New:	NS-4a
Project Location:	Edwards Diversion Dam, Antelope Creek lat 40.187116 long -122.134773, elevation approximately 312 ft.

Project Description:

There are two water diversions at the canyon mouth on Antelope Creek. One diversion is operated by the Edwards Ranch with a water right of 50 cfs, and the other by the Los Molinos Mutual Water Company and Edwards Ranch with a water right of 70 cfs. Antelope Creek flow is typically diverted April 1 through October 31.

Currently, the Los Molinos Mutual Water Company and Edwards diversion ditches are screened; however no system was installed during screen construction to bypass fish back to Antelope Creek. The screens are located a fair distance down the diversions. One factor that complicates this facility is New Creek, an overflow channel, runs between the two diversion ditches. The west diversion ditch is located on the far side of New Creek, away from the

II. Project Description

diversion dam.

During low water years, irrigation begins before salmonid juveniles and steelhead have finished their outmigration. These juveniles become trapped at the screens in the diversion ditches with no access to Antelope Creek. Currently, fish are rescued and hauled to the Sacramento River.

AFRP funded a feasibility study, environmental documentation, permits, and design for a solution at this site in 2008. Implementation can begin in 2010. Funding is needed for implementation of design.

III. Species Limiting Factors

In this section, describe the limiting factors for spring-run Chinook salmon and steelhead in your watershed. The last page of this questionnaire defines the limiting factors.

Limiting Factors	Description (from back page)	Rank
☒ **Channel Form**	Below Edwards dam, Antelope Creek divides into many different channels. The water is divided into these channels, thereby stranding juvenile salmonids, and possibly delaying migration of adults, in low water years. When Antelope Creek overflows into New Creek at the Edwards diversion dam, the water drains into another stream, Salt Creek. This multi-channel issue is identified in the 2001 Final AFRP Restoration Plan as an Evaluation needing to be completed.	Critical
☐ **Channel Unit Types**		Select Rank
☐ **Substrate**		Select Rank
☐ **Structure**		Select Rank
☒ **Flow**	Flow is an issue downstream of the Edwards dam. In low water years the stream can be dry spring through fall. What additional water rights occur downstream of the Edwards dam is unknown.	Critical
☒ **Temperature**	The temperature limiting factor is related to flow. Temperatures become lethal in the valley floor once the air temperature rises and flow is diverted.	High
☐ **Water Quality**		Select Rank
☒ **Passage**	Adult passage is affected by the multiple channels in the lower section, the amount of flow diverted at Edwards dam, and the partial barrier in the CDFG Tehama Wildlife Area. In addition, juvenile passage is affected by the current crossing structure in the Tehama Wildlife Area, the lack of a bypass from the two diversion canals at Edwards dam, and the multiple channels below Edwards dam.	Critical
☐ **Riparian/Floodplain**		Select Rank

Source Documents:

III. Species Limiting Factors

Additional Notes:

Clarifying notes on Project Objectives - Biological: Initial diversion timing, and length of time water is diverted, is dependent on the water year. During wet years, there is more water in the channel, and therefore reduced concern that the bypassed out-migrating juveniles can make it to the Sacramento River. However, in critically low water years, juvenile salmonid rescue may still need to occur due to significantly reduce flow (possiblility of stranding), as well as lethal water temperatures. The bypass would be closed during these times and rescued fish would be released into the Sacramento River to ensure the greatest survival.

IV. Project Objectives—Environmental

In this section, describe how your project will affect one or more of the limiting factors for spring-run Chinook salmon or steelhead described above.

Limiting Factor	Description and Objective	Focus
☐ **Channel Form**		Select Focus
☐ **Channel Unit Types**		Select Focus
☐ **Substrate**		Select Focus
☐ **Structure**		Select Focus
☐ **Flow**		Select Focus
☐ **Temperature**		Select Focus
☐ **Water Quality**		Select Focus
☒ **Passage**	This project will allow juvenile salmonids and steelhead kelts access to Antelope Creek without aid. Delay in outmigration will be eliminated when adequate flows and temperature exist in Antelope Creek (see notes above under III).	Primary
☐ **Riparian/Floodplain**		Select Focus

V. Project Objectives—Biological

In this section, describe the objective(s) of your project relative to the goal of providing habitat for spring-run Chinook salmon and steelhead. Indicate the species and life stage that are targeted by the project. (It is okay to have more than one species/life stage target).

Target Species: ☒ Spring-Run Chinook Salmon **Population Status Specific to Watershed:** Decreasing

Target Life Stages:

☐ Spawning ☐ Egg Incubation ☐ Summer Rearing ☐ Winter Rearing

☒ Juvenile Emigration ☐ Adult Immigration ☐ Adult Holding

Description of Project Objectives:

In the past two low water years (2007 & 2008), early irrigation has stranded juvenile salmonids and steelhead kelts at the diversion ditch screens. Fish were rescued and hauled to the Sacramento River, requiring the fish to be handled. This project will eliminate the outmigration delay during times of adequate flow and temperature in Antelope Creek. During critically dry years, there may not be enough flow in Antelope Creek downstream of Edwards diversion dam to get the fish to the Sacramento River. This is due to the multiple channels the stream divides into downstream, and the amount of water diverted. Rescue and release may still be occassionally needed (see notes under III).

Target Species: ☒ Steelhead **Population Status Specific to Watershed:** Relative to Historical

Target Life Stages:

☐ Spawning ☐ Egg Incubation ☐ Summer Rearing ☐ Winter Rearing

☒ Juvenile Emigration ☐ Adult Immigration

Description of Project Objectives:

In the past two low water years (2007 & 2008), early irrigation has stranded juvenile salmonids and steelhead kelts at the diversion ditch screens. Fish were rescued and hauled to the Sacramento River, requiring the fish to be handled. This project will eliminate the outmigration delay during times of adequate flow and temperature in Antelope Creek. During critically dry years, there may not be enough flow in Antelope Creek downstream of Edwards diversion dam to get the fish to the Sacramento River. This is due to the multiple channels the stream divides into downstream, and the amount of water diverted. Rescue and release may still occassionally be needed.

VI. Project Cost

Capital Cost:	estimated $150,000
Annual Operation and Maintenance Cost:	?
Annual Operation and Maintenance Description:	?
Project Lifespan:	35 years ?
Project Partners	AFRP has funded the environmental documents and design, $60,000

VI. Project Cost

(Funding):

Project Partners (Maintenance):	CDFG, potentially ditch owners

VII. Schedule

Proposed Start:	2010
Expected Time to Completion:	one field season
Expected Time to Realize Environmental Benefits:	immediately
Expected Time to Realize Biological Benefits:	immediately

VIII. Feasibility

Technical Feasibility:	An evaluation is currently underway. It is known that the east diversion bypass is an easy fix. The west diversion bypass is much more complicated due to New Creek and the site topography.
Technical Challenges:	Putting a bypass across an intermittent channel and getting enough slope to the bypass due to the flat terrain.
Related Projects:	A project is occurring upstream in the CDFG Tehama Wildlife Area, replacing the current low water crossing with a bridge. Project NS-5 Questionnaire.
Ownership or Permitting Challenges:	Permits and design will be completed in late summer/early fall 2009 with currently AFRP funded project. The site is on the privately owned Edwards Ranch. Currently the Tehama County RCD (TCRCD) has a working relationship with the Edwards Ranch. Working with the TCRCD will be essential. The Los Molinos Mutual Water Company is on board. The Edwards Ranch is also, but they do have a lot of concerns that will need to be worked out.
Conflicts with Cultural, Zoning, or Other Issues:	None identified at this time.

IX. Project Support

Supporting Entities:	
Cooperating Entities:	USFWS, CDFG, NMFS, TCRCD
Degree of Local Support:	High within agencies

IX. Project Support

Known Opposition:	Not necessarily opposition; the Edwards Ranch realizes this needs to be addressed but also recognizes that the creek downstream of the diversions may not be the most hospitable during some outmigration times. Therefore, they have valid questions regarding the order of addressing issues. There is a need to address the multi-channel issue, as identified in the Final AFRP Restoration Plan. In addition, the Ranch feels their privacy is being impinged upon so working with the TCRCD is essential in making contact with the Edwards Ranch and working on the project. This is not a show-stopper; just need to be aware and take care.

X. Supporting Documents

Please provide a full reference for each citation used to support the information presented in this questionnaire.

USFWS. 2001. Final Restoration Plan for the Anadromous Fish Restoration Program.

USFWS. 2008. Internal document of Limiting Factors developed for 10 year CVPIA Implementation Strategy.

Environmental documents, permits, and designs should be done by late summer/early fall. Available upon request.

Definitions of Limiting Factors for Spring-Run Chinook Salmon and Steelhead

Channel Form

This attribute describes changes to the channel, including incision, aggradation, diking, armoring, and other modifications of the channel adversely affecting spring-run Chinook salmon and steelhead.

Channel Unit Types

Examples of geomorphic features of the channel that form habitat types for spring-run Chinook salmon and steelhead are pools, riffles, glides, and runs. This attribute describes changes in the frequency and size of such features. For example, removal of large wood may reduce the frequency of pools, presence of steps, or retention of gravel for riffles.

Substrate

This attribute describes changes in the composition of the substrate of the stream, including increase in fine sediment and lack of gravel recruitment.

Structure

This attribute describes the loss of structural elements in the stream such as large wood, boulders, undercut banks, and so on. Loss of structure results in a simplification of the channel and influences Channel Form and Channel Unit Types.

Flow

This attribute addresses modification of the flow regime, including decrease in summer low flow, increased "flashiness," and dewatering of the channel as a result of withdrawals.

Temperature

Change in water temperature can be attributable to human actions such as removal of riparian shading. This attribute describes the increase in summer water temperature and the loss of temperature refugia (springs or groundwater) as a result of human actions.

Water Quality

This attribute pertains to the input to the stream of toxins or pollutants that produce adverse impacts on spring-run Chinook salmon or steelhead. This can include chemical pollutants such as fertilizer and pesticides and nutrient sources such as cattle and feedlots.

Passage

This relates to the effect of impediments to adult or juvenile migration of spring-run Chinook salmon or steelhead, including dams, culverts, channel dewatering, and other structural and channel modifications. Please describe the location of the passage impediment and describe the extent of impediment (i.e., a complete or partial blockage to migration).

Riparian/Floodplain

This attribute describes the loss of functionality of the riparian forest/vegetation and the connection of the stream to the floodplain during high water and flooding.

Population Condition Definitions for Section V. Project Objectives—Biological

Increasing

Adult returns of the target species to the watershed have generally been increasing over the last several years; expectations are that the species is displaying characteristics of a rebuilding or healthy population.

Stable

Adult returns of the target species to the watershed show no clear trend over the last several years.

Decreasing

Adult returns of the target species to the watershed are declining over the last several years; the decline in abundance is a cause of concern and characteristic of a potentially unhealthy population.

Intermittent

Adult returns of the target species are occasionally seen in the watershed, but there is no viable or sustained population in the basin.

Extirpated

The population has been eliminated from the watershed although the species was present in the past.

Never Present

The species has never been known to occur in the watershed.